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Testing

Southampton may test entire population weekly for coronavirus

Michael Le Page

A CITY in the UK is about to start testing thousands of people for the coronavirus each week, using saliva and a cheap, quick way of detecting the virus. If the initial trial in Southampton is successful, the aim is to test the city's entire population of 250,000 people every week to see if this can rapidly halt the virus' spread.

"We were told there were insoluble aspects, but they have been solved," says Keith Godfrey at the University of Southampton, who is helping organise the trial. "The government is certainly seriously interested."

It has been proposed that weekly testing of a country's entire population, regardless of whether people have symptoms, could quickly bring outbreaks to an end, with the resulting economic benefits far outweighing the costs of mass testing. Advocates of the approach include Julian Peto at the London School of Hygiene & Tropical Medicine and economist Paul Romer in the US.

On 10 April, an open letter to senior UK politicians and

scientific advisers signed by Godfrey, Peto, Romer and 31 others called for weekly universal testing to be trialled in a small city. The Southampton scheme is a first step towards this.

The initial study will begin with doctors and members of their households, and will be expanded to include council workers and university staff and students, with more than 10,000 tests being done each week.

It will look at whether testing saliva works as well as taking swabs from the nose and throat, the technique currently used to detect the coronavirus. The swab method is difficult, unpleasant and unreliable, producing many false negatives. By contrast, providing a saliva sample is as easy as spitting. People can do it at home and send samples off for testing, and some unpublished studies suggest that saliva testing is more reliable.

If this proves to be the case, it would be much easier to do mass testing. For instance, children attending school could be tested weekly. "Here we have a test that

would be acceptable to children," says Godfrey.

The study is also using a method of detecting the virus called RT-LAMP, which is much quicker and cheaper than the standard PCR method. It involves little more than adding a sample to a clear tube containing the necessary chemicals, putting it

Thousands of people are to be tested each week in Southampton, UK



PAUL WHITE AERIAL PHOTOGRAPHY/ALAMY

in a water bath to warm it and seeing if the colour changes.

"You don't need highly qualified staff," says Peto. "Anyone can stick something in a water bath."

Working with the National Health Service, the local council and the University of Southampton, Godfrey and his colleagues have also developed home saliva-collecting kits, ways of getting them to and from people and IT systems for quickly telling people their results by text. The trial is also integrated with the UK's contact-tracing system.

If the trial is successful, Godfrey wants to expand it to everyone in the city. "We are doing the pilot as a potential stepping stone to that," he says.

The idea of mass testing has been dismissed by many as unfeasible, says Peto. But between 14 and 24 May, China tested 9 million people in Wuhan. The tests identified around 300 people with asymptomatic infections and seem to have helped prevent a resurgence of covid-19 in the area. ■

Long-term impacts

Coronavirus has permanently scarred some people's lungs

PEOPLE infected with the coronavirus may be left with permanent lung damage.

The numbers of those affected aren't yet known, but estimates are as high as one in five people who needed intensive care treatment for covid-19.

Permanent damage sometimes occurs after other kinds of chest infections that can cause similar lung inflammation to the coronavirus, such as flu and

pneumonia. "We have always seen this before. What's different is the scale of this," says James Chalmers, a chest physician and adviser to the British Lung Foundation.

Previously, his clinic in Scotland would have seen post-infection scarring of the lungs once or twice a year, he says. "Now we are seeing dozens of patients coming through."

In a study in Italy, which was one of the first European countries to be hit by the coronavirus, doctors are scanning the lungs of people three months after they fell ill. Although the full results aren't yet in, Paolo Spagnolo at the University Hospital of Padua estimates that

15 to 20 per cent of those treated in intensive care at his hospital for covid-19 have scarring. "We have to be prepared in the future to manage these patients," he says.

In most people, the coronavirus causes only mild symptoms, but in some it leads to serious lung inflammation and an excess of immune signalling chemicals, leading to a complication called a cytokine storm. "If left unchecked, the inflammation starts to cause

20%

of people treated for severe covid-19 may have lung scarring

damage and scarring," says Chris Meadows, an intensive care doctor at Guy's and St Thomas' NHS Foundation Trust in London.

If someone is left with scarring, also known as fibrosis, there is no way to reverse it, says Chalmers. All people can do is try to improve their aerobic fitness to compensate.

Lung damage isn't confined to people who needed ventilation with covid-19, he says. "More severe covid means more likelihood of permanent damage, but I have got a couple of patients who were not on ventilators and have long-term complications." ■

Clare Wilson